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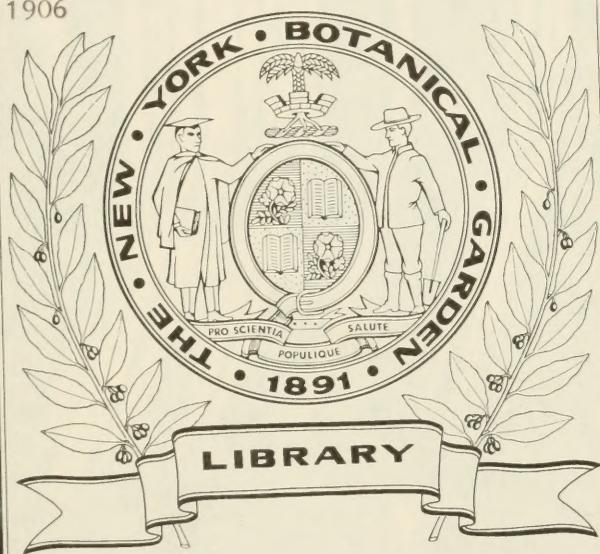
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# A HISTORICAL SKETCH OF THE DEVELOPMENT OF BOTANY IN NEW YORK CITY

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By HENRY H. RUSBY, M.D.

PRESIDENT OF THE TORREY BOTANICAL CLUB

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## A HISTORICAL SKETCH OF THE DEVELOPMENT OF BOTANY IN NEW YORK CITY.\*

BY HENRY H. RUSBY.

It is my purpose this afternoon to direct your attention to the influences whose workings have brought into existence the present highly satisfactory organization of botanical work in this city. Among many minor elements, three stand out prominently, and call for our special attention. They are: (1) local botanical gardens, including the present one, and the persons who have been associated in their management; (2) the botanical department of Columbia College; (3) the Torrey Botanical Club.

Were we to commence with the very earliest botanical history of our city, we should be carried back to a time when, as an important seaport in a new world, it was made the temporary headquarters of visiting botanists, who accumulated here their collections, maintaining some of them in a living condition, until the arrival of a convenient opportunity for dispatching them to the mother countries. Such occurrences as these, exerting little influence in the permanent development of a botanical center here, occupy no place in to-day's consideration. Developmental work of the kind that concerns us was active, previous to the close of the 18th century, at some points farther south, especially at Philadelphia, and in New England, but not at New York.

The first important event here was the work of Doctor, afterward Governor, Cadwallader Colden and his daughter Jane, who, near the middle of the 18th century, conducted their studies with the aid of a small botanical garden at their home, near Newburgh.

\* An address delivered before the Torrey Botanical Club at a special meeting held on May 23, 1906, in commemoration of the tenth anniversary of the commencement of work in the development of the New York Botanical Garden.



Perhaps the most important part of this work consisted of the correspondence carried on with native and foreign botanists regarding their local flora, and the transmission of specimens. Miss Colden first made known our pretty little *Coptis*, or gold-thread.

A much more important event was the arrival here, in 1785, of the elder Michaux, who established a celebrated botanical garden at New Durham, N. J., the site of which is now occupied by the Hoboken cemetery. A brief account of this garden may be found in the *Bulletin* of our Club, **II**: 88. 1884. In that year I saw growing there a barberry bush which apparently represented the last trace of Michaux's plantings, except that the European medicinal shrub *Rhamnus Frangula*, which he appears to have introduced, has established itself in the adjacent lowlands, and at some neighboring points. Michaux's garden was established especially for the temporary cultivation of plants designed to be sent to France, or to yield seeds designed for such shipment. Nevertheless, so zealous an investigator as Michaux could not fail to utilize this agency for purposes of study, and his great work, *Flora Boreali-Americana*, published in 1803, and other works on North American botany, were thus materially enriched. Michaux's work in this country was continued by his son, one of whose important publications was a *Histoire des arbres forestiers de l'Amérique Septentrionale*, afterwards translated into English as *The North American Sylva*, and this also profited largely by the observations made by the father, while maintaining his garden.

During the time when the Michauxs were so active here, Mr. Samuel L. Mitchill was assiduously collecting plants in the vicinity of his home at Plandome, Long Island, a catalogue of which was published in 1807. His work is of special interest to us, since he was the first professor of botany in Columbia College.

The flora of Manhattan Island was at this time being very actively studied by Major John Le Conte, who in 1811 published an important catalogue relating thereto.

It is a well recognized historical fact that up to this time, and indeed for a long period following, botanical work proper in this country, consisted chiefly of the collecting and naming of plants, and the description of new species.



Writing of the period about 1814, made memorable by the publication of Pursh's *Flora Americae Septentrionalis* and Bigelow's *Florula Bostoniensis*, Darlington says "Botanical works now began to multiply, in the United States — and the students of 'the amiable science' found helps in their delightful pursuit, which rendered it vastly more easy and satisfactory than it had been to their predecessors."

The next botanical undertaking in this city was of the greatest importance in connection with our study, and calls for our particular attention. The successor of Dr. Mitchill as professor of botany and materia medica in Columbia College was Dr. David Hosack, a man of equal breadth and of great strength and energy. His interest in botany was chiefly medical. Most of the amateur botanists of that day were practising physicians, and many, if not most of the professionals had received a medical education and training, so that Dr. Hosack's attitude toward the science was not at the time peculiar. This fact reminds us that outside of the investigation of general and local floras, in their relations to geographical and taxonomic botany, interest then centered chiefly in the medicinal properties and uses of plants. A comparison between this branch of study as then understood and as now conducted can be briefly placed before you by stating that most of the plants then regarded as the important medicinal agents have been dismissed by modern medicine, except where it is trammelled by medical sectarianism. The explanation of their error is not that their results were reached empirically, for this is an excellent method, but that their empirical processes were full of natural sources of error, depending on impressions produced upon unqualified observers, among both patients and practitioners. The chemistry of plants was then practically unknown, whereas it is now the basis of medical botany. Since chemistry constitutes at the same time the visible basis of physiology, and physiology brings us as close as it is possible for us to get to the life of the plant, it follows that medical botany, while not entitled to the objective position that it held in the days of Hosack, is concerned with the same phenomena which engage the attention of the very highest workers in botanical science at the present day.

The great difference between the latter and the work as pursued by Hosack lies in our knowledge of the nature of the life processes and therefore of the proper and effective methods of studying them. Even in the state of ignorance which then existed, it was clear to such keen reasoners as Hosack that the reaching of sound botanical conclusions required that the living plant be kept under observation, and he became possessed of the strongest determination to establish a botanical garden adequate to the needs of local botanists and teachers of botany. After long efforts to secure sufficient coöperation, he at length decided to enter independently upon the enterprise, and in 1801 he purchased 20 acres of land at Elgin, now bounded by 46th and 50th Sts., and 5th and Madison Avenues (or probably of somewhat greater extent) and established the famous Elgin Botanical Garden, better known perhaps as the Hosack Botanical Garden. Besides his hardy plants, many were grown in a large conservatory. The site of this garden was described in 1811 as "about three and one-half miles from this city, on the middle road between Bloomingdale and Kingsbridge." This garden has of late years become so well known through various writings, that I shall not take up its general history. Hosack announced its primary object of attention as being the collection and cultivation of the native plants of this country, especially such as possessed medicinal value or were otherwise useful. He gratefully acknowledges assistance received in starting his Garden from Professor Mitchill, his predecessor, from the Hon. Robert R. Livingston and from John Stevens, Esq., of Hoboken. He soon learned what has recently become apparent to many persons here present, that the successful conduct of a botanical garden is a work of enormous labor and serious responsibility, and that one man, otherwise engaged, cannot accomplish it. With the garden already in actual successful operation, it was not so difficult to enlist state interest, and the legislature was induced to purchase it in 1810, and to provide the necessary funds by means of a lottery. Hosack subsequently enjoyed the classical distinction of all successful promoters of great enterprises, in being assailed by the high-class scum of citizenship. By subsequent legislative action the



property was turned over to Columbia College, and its use diverted from that of a botanical garden to that of highly profitable rentals.

We cannot understand the botany of Hosack's time without a brief glance at some of his contemporaries and immediate successors, especially those who exerted local influence. The list includes the names of some of the most honored of American botanists. Biographical sketches of all are to be found in our *Bulletin* file, so that I need not repeat the purely historical data, but may speak of the character of these men and of their work, in its relation to our subject. Foremost of them all was John Torrey, whose name is commemorated, I hope permanently, in that of our society. Following Dr. Hosack, he was the third of the five men who, up to the present, have occupied the chair of botany in Columbia College. His characteristics may be expressed in the terms, strong personal character, broad scholarship and great intellectual ability. Although best known to us as a botanist, yet thirty years of his life were those of a great teacher and worker in chemistry at the U. S. Military Academy at West Point, in the College of Physicians and Surgeons of this city, in Princeton College, and as U. S. Assayer in the New York office. Had the necessary facilities then existed in this country, it seems likely that this man, combining such a great knowledge of botany and chemistry, might here have developed important researches in the chemistry of plants. As a matter of fact, his knowledge of botany was acquired chiefly as a recreation in the hours of leisure afforded by his other professional work. Yet Underwood truly writes, "When the annals of American botany are finally written, no name will have a more conspicuous position than that of John Torrey."

Almost before reaching manhood Torrey was one of the founders of the New York Lyceum of Natural History, and was the leader in publishing, through it, a catalogue of plants growing within thirty miles of the city. Five years later he published the first part of his *Flora of the Northern and Middle Sections of the United States*, and later his *Compendium* on the same subject, important forerunners, in more than one way, of Gray's Manual.

These accomplishments proved him the great master that he was, and soon his hands were crowded with important work, especially connected with the active explorations of our western territory then in progress. In this work he was a close associate of Asa Gray, and probably their most important work was the first parts of their *Flora of North America*, published from 1838 to 1843. Many men whose work has thus branched out from local into general lines have allowed the latter to supplant and replace the former, but this was not true of Torrey, who combined in rare degree generic and specific powers. Not only were his interest and activity in local work undiminished, but they grew apace, and his patient and quiet enthusiasm gathered about him a group of associates who not only were devoted to him personally, but imitated and emulated his work. In this saying is stated the immediate origin of the Torrey Botanical Club. At various points in the history of our Club, we have been reminded that "a nation has arisen that knew not Joseph," and various proposals have been made for changing the name of the society. Let us record now the opinion that the selection of Torrey's name for this purpose was so just, natural and appropriate that its retention amounts to a historical necessity.

Except for the published works of Torrey, most of those of this early period which here concern us were of a somewhat general nature, but naturally including our local interests. Of these may be mentioned the following: In 1813, Muhlenberg's *Catalogue of North American Plants*, and in 1817 his work on North American grasses and sedges; in 1818, Nuttall's most scholarly work on the genera of North American plants; in 1820, Gray's *Genera*; in 1822, Schweinitz's *Monograph of the Genus Viola*; in 1833, Beck's *Botany of the Northern and Middle States*; in 1834, Schweinitz's work on North American Fungi, and in the same year, Gray's *Monograph of the North American Species of Rhynchospora*. In the meantime, very important works of a similar character were being produced in the South, and to a lesser extent, in the West.

These publications, it will be observed, were chiefly of interest to those actively engaged in original work, and not to young



students. In 1803 there appeared about the first work designed especially for the latter class, an elementary work on botany by Barton. Writing of 1824, Darlington says: "About this time some of the schools in the Northern States began to make a profession of teaching botany, and a demand for suitable books for this purpose arose. Accordingly, a number, such as they were, soon appeared. Among the most successful was a *Manual*, compiled by Professor Amos Eaton, of Troy, New York." Of the character of the educational works of the period, little need be said, since it is sufficiently indicated in that of the work in which botanists were then engaged. This sort of botanical teaching entered upon its most active stage with the appearance of Gray's *Elements of Botany*, in 1836, a work that is still being sold upon an extensive scale, and this, in your speaker's opinion, very greatly to the advantage of botany, in spite of the many books of different character, the use of which we so greatly enjoy. The publication, for the use of students, of text-books on structural botany, and later on morphology, in connection with manuals on local floras, became very popular, and of incalculable value in interesting people in the study of plants.

We must now pass from this general consideration of local botanical development up to the middle of the last century, and follow some special influences proceeding from the growth of the botanical department of Columbia College. During the period when Dr. Torrey was at its head, that department was very actively engaged in educational work, though this was of the peculiarly restricted sort characteristic of the times. About the time of his death in 1873, his herbarium and library, which he had previously maintained in his home, came into the possession of Columbia, together with the herbaria of Crooke, Chapman and Meissner. To these, collections from various parts of the world, and especially from those parts of the United States then being explored, were rapidly added, and a very large and important herbarium soon grew up; but no professor of botany was appointed to succeed Dr. Torrey, and the herbarium was neglected by the curator in charge. A very large part of it was not classified, nor even named, and lay in the form of a small mountain of dusty bundles

which were not, and could not be consulted. Botanical instruction was most meager, and was merely a part of the general course in biology. There was not, in fact, a department of botany, the subject being treated as a subordinate of geology, under Professor John S. Newberry. From 1875 to 1879, Dr. Britton was a student at the School of Mines, and was strongly attracted, by natural taste and ability, toward the botanical side of his work. When upon his graduation he was appointed assistant to Dr. Newberry, he appreciated clearly the great value of the materials for a botanical department, to be organized on a new and modern basis, which were in the possession of the College, and he began a careful and systematic examination of them. In speaking of this exceedingly important event in the general, as well as in the botanical, history of New York, your speaker takes the keenest delight, as he was for most of the time one of the closest associates of Dr. Britton, and can speak of that which he not only saw, but which he watched with appreciative interest.

A special stimulus to Dr. Britton at this time was his interest in his first great botanical undertaking, the preparation of an elaborate catalogue of the plants of New Jersey, this also, being performed subordinately to a department of geology. In this undertaking, an intimate association with the members of our Club and an active participation in its work were prime essentials to success, an illustration of the way in which existing forces worked together in carrying forward our natural botanical development. Another potent influence of a similar nature should be here recorded. At this time considerable botanical material from distant parts of this country and from other hitherto unexplored regions was coming to this city for original study, and this made it imperative that Columbia's botanical house should be set in order in the interest of comparative work. With the knowledge and encouragement of Dr. Newberry, but with comparatively little on the part of others concerned in the management of the college, Dr. Britton carried on this work in the interim of his official duties, until at length a great working herbarium existed where before there was chaos. At the same time the botanical instruction was being extended



and, of greater importance, was being modernized. When the Doctor was at length prepared to make the situation known to Columbia, it was not to submit plans for the organization of a botanical department, but to present to it one already made, and requiring only to be officially recognized and formally named. The performance of these ceremonies, with suitable provision for maintenance, guaranteed the position of New York as one of the first botanical centers of the country, and later of the world, with Dr. Britton as Columbia's fourth professor in this department. Thus we see that at every important stage in its development, the botanical department of Columbia has owed its prosperity not to the institution as such, but to some earnest worker, ready to make the sacrifice of love. Hosack individually made the botanical garden that afterward enriched the institution; Torrey accumulated the herbarium that became the corner-stone of the later structure; Britton silently—one may almost say surreptitiously—brought about changes which have finally placed it in the vanguard of the world's botanical forces.

The intercourse and personal and professional associations dependent upon the increasing number of persons in and about New York who became interested in botanical work in Torrey's time led most naturally and inevitably to a botanical society, at first incidental and unorganized, later a formal organization.

As is true of so many institutions which grow healthily and attain to great and permanent success, the exact date of the origin of our Club can hardly be fixed. Those of you who take even the slightest general interest in this subject should not fail to read \* the inaugural address of Dr. George Thurber, delivered at the Astor House in 1873, on the occasion of his first election as our first president. He confesses his entire inability to fix on the time when Torrey and his friends virtually established the society. He says that for a long time after the election of the first set of officers the members found it impossible to break from the habit of informal, free-and-easy, conversational meetings which had grown up and which, I must remark, have always been found the most effective in the Club's work, whenever they have recurred.

\* Bull. Torrey Club, 4: 26-39. 1873.

The Club's formal organization was undertaken in 1867, and its incorporation occurred four years later, under the name New York Botanical Club, changed the following year to that which it now bears. Within three years after its establishment the Club began issuing a monthly publication, the *Bulletin*, since uninterruptedly maintained. Its prefatory note declared its primary object to be "to form a medium of communication for all those interested in the Flora of this vicinity, and thus to bring together and fan into a flame the sparks of botanical enthusiasm, at present too much isolated. . . . We have chiefly in view the development of a greater botanical interest in our neighborhood, and found our hopes of success as much upon learners as upon the learned." May I pause here to ask all those present to regard this sentiment as that which actuates our Club to-day. There have been unfortunate periods in our history when this fundamental principle has been lost sight of; when learned newcomers, unfamiliar with our history and character, have assumed that we existed for the learned only. Believe me that this spirit does not exist to-day. We are most desirous that the knowledge should go abroad that the Torrey Botanical Club exists and is maintained for the most humble learners, equally with the learned, and our invitation to membership is to-day most cordially extended to everyone who desires either to assist in strengthening our influence, or to be assisted by us.

In the further unfolding of its objects, the *Bulletin* unconsciously states the object of the Club's organization: "An attentive study of plants in their native haunts is essential to the advance of the science, and in this respect the local observer has an advantage over the explorer of extensive regions, or the possessor of a general herbarium. He can note the plant from its cradle to its grave; can watch its struggles for existence, its habits, its migrations, its variations; can study its atmospheric and entomological economies; can speculate on its relations to the past, or experiment on its utility to man." Ecology is thus clearly seen to be the object of study, notwithstanding that the name of it was not generally discovered by our botanical fraternity until about 1890, nor the active and merciless chase of the poor



thing by American botanists well under way until about five years later.

From this time up to the establishment of the New York Botanical Garden the history of our Club is practically that of botany in this city, for very little was done that was not directly or indirectly connected with us or, one might say, actually centered about us. This fact is of the utmost importance in our study, since upon it depends the essential character of most of what has since occurred.

The Club's history is so voluminous that it requires separate and extended treatment, and I can here do little but refer to its influence. Its first officers were George Thurber, president; Timothy F. Allen, vice-president; J. J. Crooke, treasurer; James Hogg, corresponding secretary; P. V. LeRoy, recording secretary; William H. Leggett, editor; P. V. LeRoy, curator.

Some of the more influential of the early members call for attention at this point.

Dr. Thurber, our first president, was characterized by profound conscientiousness and great determination. He began life as a pharmacist, in Providence, and developed a strong leaning toward chemistry, of which subject he became a teacher. His love of botany grew out of his study of drugs. In 1850 he went as botanist, quartermaster and commissary to the Mexican Boundary Commission, the botanical results of which were published by Torrey in 1859. He received the degree of A.M. from Brown University, and the honorary degree of M.D. from the University Medical College, of this city. He was in the U. S. Assay Office for two years and left from motives of honor. He was at various times a teacher in Cooper Union, the New York College of Pharmacy and Michigan Agricultural College, and was president of several horticultural societies and of this Club until 1880. For twenty-two years he was editor of the *American Agriculturist*, in which capacity he exerted an influence over the character of young people, in the agricultural sections of the country, that was and is of great national importance. His most important contribution to botanical work was perhaps the maintenance of a botanical garden at Passaic, New Jersey, in close

relations with that of Harvard. His private fortunes were melancholy. Captured by the whirl of speculation in real estate that followed the civil war, he purchased land at an excessive price, and spent the rest of his life in a painful struggle honorably to discharge his financial obligations.

Mr. Wm. H. Leggett, our editor until near the time of his death in 1882, was a distinguished and successful educator, maintaining a private school in the upper part of the city. He was described as a "profound classical scholar," making a specialty of Greek. Notwithstanding this predilection, he managed to perform his botanical work in a most creditable manner, and exerted a persuasive influence in interesting the young in this study. It must not be overlooked that in founding our *Bulletin* he assumed the financial responsibility for its success.

Professor Alphonso Wood will be ever remembered by American botanists as the author of descriptive floras of the highest scholarly character, and put together with a rare regard for educational principles. Those who are fortunate enough to have owned and carefully used his books will recognize, in the light of our present advancement, that his knowledge of plants was more full and accurate than that of most of our American botanists who have written similar works. His life was not a happy one. The influences of prestige and station were deliberately turned against him, and he was to a great extent suppressed. The manuscript of his Class-book was used by him in teaching, and steadily perfected, for ten years before its publication, which was very successful. His work in life was that of an educator. He taught in and presided over a number of institutions, and brought educational and financial success wherever he went. In 1865 he made an overland botanical journey to California, then to Puget Sound, and home by way of the Isthmus. The specimens and observations accumulated on this journey were very valuable, but have never been systematically studied. He was professor in the New York College of Pharmacy during the two years preceding his death, in 1881.

Mr. Coe F. Austin was born at Closter, N. J., in 1831, and died in 1880. His chief characteristics were a marvelous



energy and capacity for work, and great independence and originality in selecting his lines. His energy was closely confined, so far as general botany was concerned, to the local flora, and no other man has done so much to make known the flora of northern New Jersey. He was at the time one of the very few local workers in bryology and practically our only close student of the Hepaticae. Unfortunately, his botanical zeal caused his family to be deprived of many of the important possessions of this life.

Mr. M. Ruger, who died in 1879 at the untimely age of 44, was in many respects a memorable character. His physical constitution was so weak that he could never attend school, nor engage in any vocation, yet he succeeded in acquiring a very liberal education, and in pursuing the avocation of botany until he came to be known as the Club's "walking encyclopedia." His knowledge of the local flora was remarkably full and remarkably accurate, and before he died this knowledge was extended over a large part of the country. Not only did his observations enrich the proceedings of the Club and the pages of the *Bulletin*, but his collections did much to build up the Club's herbarium. His work was notable for extending into such fields as that of mycology, then almost unworked, and for many years all questions arising in the Club relating to fungi were habitually referred to him. He was stricken down while botanizing and died two days later.

Professor Joseph Schrenck was a school principal in Hoboken, who applied his scholarly tastes and abilities to the study of botany in ways then little known among us, and he labored diligently and with great patience to lead others in the same direction. He obtained a professorship to do evening work in the College of Pharmacy. This work, along strictly technical lines, led him to a deeper study of plants, both anatomical and physiological, by the use of the microscope and chemical reagents, than that which then prevailed here. From this experience he was soon led to deplore the superficiality of current work, and he started private classes among the Club's members for interesting them in methods which he saw must soon become dominant.

Although general tendencies were not thus changed, many persons were interested, and some of our best workers of the present day acquired their first training in this direction from these humble efforts of Professor Schrenck.

During the same time another worker, Professor E. H. Day, who reminds us of Schrenck in some ways, was active in similar work at the City Normal College. Tied down by the unceasing drudgery of wholesale elementary teaching, he might have been pardoned for falling into the rut and then into the slough, but on the contrary, he kept both his interest and his activity fresh, and he was ever alert in inspiring his students with a love of the subjects studied, which might lead them later to continue their studies as amateurs. In 1883, while occupying the chair at a Club meeting, he suggested the appointment of a sub-section for the study of physiological botany. A committee was appointed, consisting of Messrs. Hyatt and Britton, and Miss Knight, now Mrs. Britton. This was perhaps a very important historical event.

Dr. Timothy F. Allen had one of the longest uninterrupted careers as a member in the annals of the Club, extending from its foundation to 1902. During the early part of this career he was very active in the meetings and in all the work of the Club, and later he developed an interest as a successful investigator of the Characeae. His later life was an intensely busy one in the field of medicine, both as a practitioner and teacher, and his botanical activity was to a great extent crowded out, but he never lost his interest in the Club, nor did he ever fail in his readiness to respond to any special call for coöperation.

Mr. Wm. H. Rudkin was an active down-town business man, who lent his fine abilities to the financial management of the Club as its treasurer for many years when this duty required faithfulness, tact, sacrifice and responsibility. He was by no means wanting in botanical acumen, nor failing in activity, but it is in the capacity above mentioned that he is to-day deserving of our special remembrance and gratitude.

Dr. Emily L. Gregory, though not one of the older members of the Club, exerted a profound influence upon its character and

upon that of botanical work in the city. Thoroughly educated in the best modern schools of Germany, and especially a disciple of Schwendener, she became here a missionary of advanced work and methods. She founded the botanical department of Barnard College and established there a botanical center which has since steadily grown in strength and influence, and is now one of our most important botanical possessions.

It has been seen that the work of the Club was at first narrow as to the subjects involved, because the science itself was so, especially in this country. It continued afterward to retain this character, largely by force of habit. It is not true, however, as has been generally accepted, in response to the criticisms of those who did not know, that its work was confined to accumulating and naming specimens, enumerating circumscribed floras and studying individual structures. Its work was the study of living manifestations of plants in the field, a study which has of late been largely eliminated, to the very great misfortune of science, as here pursued. There came a time when New York experienced an invasion of botanists with concepts, knowledge, interests and methods which were largely foreign to us. Their importations were of incalculable value to New York, and at the same time most urgently needed, and resulted in giving to us a new, modern and broad botany. The event was not, however, free from unfortunate incidents. Laboratory work was given undue prominence. Ecological and other field work came to be largely neglected, and what might not inappropriately be called the disjointed period of the Club's history ensued.

With a few closing remarks, the history of the Club must be dismissed from further consideration. Its publication work has steadily increased, until it now includes three periodicals, the smallest much larger than was the *Bulletin* until many years after its commencement. It has published catalogues of plants of local and distant areas, monographs of important groups, and results of important anatomical, physiological and economic researches. It has collected lists of works and workers, and maintained indoor scientific meetings, at first one, then two monthly, and delightful, and on the whole, very profitable, field meetings, hereafter to be



conducted on a systematic basis not previously attempted. It has conducted elementary courses of instruction, and given lecture courses. Its work has included every part of the vegetable kingdom, and covered almost every part of the world. Its influence in securing the establishment of our present botanical garden may next be considered.

So eager was the desire of the early members of the Club to observe how plants lived, that many of those able to own gardens ignored vegetables and flowers, and maintained little botanical gardens at their homes. Mr. Wm. Bower, for example, was a hard-worked die-cutter of Newark, yet he managed to accumulate, in his little city yard, a choice collection of native and foreign rarities. These statements relate to a period when the most generous botanizing grounds were still within easy reach of everyone, some of them existing even in the heart of the present city.

As succeeding decades of extending settlement destroyed the localities which had been so greatly prized, not only in the remote parts of the island but in the country round about, these people not only mourned their present loss, but were alarmed by the handwriting on the wall, and the demand for a botanical garden arose independently in the mind of every botanist, professional and amateur. So early as 1874 the Club appointed a committee to act with the New York Pharmaceutical Association in requesting the city to establish such a garden in Central Park.

As the educational side of our work grew in importance, and especially in breadth, and as the student body doubled and redoubled, the cry for the garden grew equally loud from that direction, and continued until at length it was satisfied. The great value to Harvard and its work of the well-managed plot that it utilized in this way was appreciated and often discussed at the little meetings which gathered around the old pot-stove in Professor Newberry's room, during his presidency of the Club.

Under the influence of Columbia's progress, as already described, it appreciated this want as much, probably, as any other of our botanical elements. Its peculiar relations to the former Elgin Garden were recalled in the public press. A contributor to the New York *Herald*, of November 26 and 27, 1888,

made an earnest appeal for the recognition by the city of this great want. Dr. Arthur Hollick, to whose faithful and self-sacrificing work as secretary, our Club largely owed its strength for a prolonged period, directed our attention to these articles and proposed that he write an official letter to the *Herald* endorsing them. Such a letter was authorized, and it appeared on December 2 following. A committee was appointed consisting of Dr. Hollick, Mr. E. E. Sterns, and Professor Newberry, to deliberate and report to the Club whether it were advisable for us to take any action for the furtherance of this movement. The possibility of the realization of our long cherished hopes now began to take possession of our minds, yet without any very strong hope being entertained. The Club had no political influence and little acquaintance with those financial interests, the aid of which was rightly deemed to be essential to success. As it resulted, however, some of these men were led to interest themselves in the proposition, largely through the influence of Judges Addison Brown and Charles P. Daly, and of Mr. Charles F. Cox and Mr. Wm. E. Dodge. For a long time the idea was regarded with favor in influential circles, but without any definite steps being taken to execute it. Finally, it was remembered that all history teaches that when you have wearied of discussing a project, and are at length really resolved to carry it out, you must call in the assistance of the women. So a ladies' committee was appointed and held a memorable meeting at the residence of Mrs. Charles P. Daly, which some of the men, your favored speaker among them, were graciously permitted to attend. This influence, while but one of many, each of which was necessary to success, seemed to give the final impetus needed. Mr. Cornelius Vanderbilt assumed the financial and executive management of the enterprise, and the stage of organization was reached.

One element in the success of the Garden that has already shown itself to possess a value beyond price, and which is certain to do so with increasing clearness in the future, is the protective influence of its charter. Born of the learning, long and wide experience and ripe judgment of Judges Brown and Daly, and occupying their attention for considerably more than a year before they

were willing to regard it as satisfactory, it seems to provide for every important contingency that it was possible to foresee, and it promises a safety, permanence and stability that are too often wanting in similar organizations.

To enter upon a discussion of the personal credit due in the membership, the board of managers and of scientific directors, and in the Garden staff, would be an agreeable pleasure, but I must confine myself to the very earnestly made remark that the great success of the Garden has been due to the love of the institution and its work which has animated all concerned in it. It is this which has lent faithfulness, earnestness and energy and has incited to many acts of great sacrifice. If it could ever be said of any similar institution, we are able to say of this that it is a monument of loving service, in which work has been accepted in considerable part as its own reward. This is wholly true of Mrs. Britton's work in building up one of the most important departments of bryology in existence.

I dare not enter upon a detailed history of the Garden's development, and it has been so often and so recently recorded that I do not deem it necessary. An excellent account of its organization and of Columbia's relation to it, by Professor Underwood, can be found in the *Columbia Quarterly* 4: 278. 1903. Our charter was secured in 1891 and was amended in 1894. It was agreed upon that 250 acres of park lands should be set apart for our use and \$500,000 appropriated for the museum building and conservatories, as soon as an endowment fund of \$250,000 was obtained. This fund was completed in 1895, Columbia University making the first subscription of \$25,000. With the election of Dr. N. L. Britton as Director-in-Chief, and his selection of a working staff, the preparations were complete and work began in 1896, the event which we are to-day celebrating. This was the year in which the first part of Britton and Brown's Illustrated Flora was published. Ground was broken for the Museum Building in December, 1897, and for the conservatories in 1898. The Museum was opened in 1899. In 1898 the bulk of the herbarium of Columbia College, numbering nearly half a million specimens, and of its botanical library, including more than 5,000



bound volumes, was turned over to the Garden, in trust and for its use, under certain stipulated conditions. Since then the herbarium has been more than doubled, and the library has been enlarged to 18,000 volumes. A vast amount of grading has been done, many miles of walks and roadways built, bridges erected, and a great increase in all the collections has been made. Besides the *Bulletin* and the *Journal*, regularly published, the Garden has entered upon a work of a much more ambitious character. Utilizing the David Lydig fund, bequeathed by Judge Daly, it has begun the publication of an elaborate "North American Flora," the first parts of which have already been published. Provisions have been made also for the publication of colored plates of American plants.

Among the very important undertakings maintained have been extensive explorations, not only in the United States proper, but in such distant regions as the West Indies and the Philippines. A tropical station is maintained in Jamaica for the convenience of visiting botanists. At the Garden a scholarship fund is maintained, by which it is rendered possible for investigators desiring to pursue important studies here to be supported for a limited period.

A bird's-eye view only is permitted us of the botanical forces at present active in our city, including schools and classes, societies and botanical gardens and parks.

Botanical instruction, in the form of nature study, is now an integral part of our elementary school system, and is continued, in one form or another, in the higher grades. Spring and fall lecture courses and object teaching are conducted at this Garden for the benefit of the grammar schools of the Bronx, and it is to be hoped that provision may soon be made for extending the opportunity to the other schools of the City. Systematic instruction for the botanical training of teachers is given at the City Normal College, Teachers College, in the pedagogical department of New York University, and by the Brooklyn Institute of Arts and Sciences. Important work in the same direction, as well as in that of original research, is conducted at the summer school of science at Cold Spring Harbor. Columbia University provides

ample and exceedingly varied botanical work in its different departments. Botanical teaching at the College of Pharmacy, now a department of Columbia University, dates back almost to the beginning of the College, in 1829. Although its work is technical, an effort has always been made to keep in sight its scientific basis.

At Columbia University itself, the department of botany is in charge of Professor Lucien M. Underwood, one of the most eminent, critical and conservative of botanical investigators, who has been accorded the status in universal botany that he merits. The bulk of the instruction work is under the immediate care of Dr. Carlton C. Curtis, and none better is given in any modern university. It seems most unfortunate that Dr. Curtis's great work should not be more generally known and more definitely recognized. This work is most ably supported by Professor Herbert M. Richards and Dr. Tracy E. Hazen in Barnard College, the department for women, which corresponds to Columbia College, for men. The instruction work at the New York Botanical Garden is of the most advanced character. Only those who have demonstrated their ability to pursue original investigations are admitted, and these are expected to engage while here in work of that character. More than half a hundred such pieces of original investigation have been conducted here in a single year.

Of local societies engaged in botanical work we have a number which are mere private associations, of a few persons, without formal organization, besides others to be mentioned. We have also a number, like the Linnaean Society, the Brooklyn Institute, the Staten Island Association of Arts and Sciences, the Bronx Society of Arts and Sciences, the West Side Natural History Society, and the local chapter of the Agassiz Association, which are engaged in the general pursuit of science, of which botany forms a part. Those devoted solely to botanical work of some sort are the New York Horticultural Society, which holds meetings, conducts lecture courses, and gives exhibitions, with the award of prizes; the Hulst Botanical Club of Brooklyn, a distinctly amateur organization; the Botanical Club of the Normal College, which aims to stimulate in its students and graduates a love of study, outside of that required by the regular course of

instruction ; and the Barnard Botanical Club, a somewhat similar organization, which aims to keep alive in the graduates a regard for the interests of the botanical department of that college, holds annually two regular meetings and provides one public lecture, and to which students of Barnard are eligible as members, after having performed one year of botanical work at the college.

Lastly, there is the Torrey Botanical Club, which endeavors to act as a central organization, representing in its membership that of all the other active botanical organizations in the city. Its present active membership numbers about 250, having increased 25 per cent. during the present year. It publishes three periodicals, holds two in-door meetings monthly, between October and May inclusive, and field meetings each Saturday during the season of plant growth. As has already been stated, an interest in plants from any point of view is the only botanical qualification required for membership, the nomination being made by some member of the Club and approved by the committee on admissions.

Among botanical gardens, it is not out of place for us mentally to include all the numerous and extensive horticultural establishments which abound in and about New York, among the stock of which is to be found such a great variety of plants of interest from botanical considerations. The public parks of this city are also to be justly regarded as affording important advantages for botanical work. Active and enthusiastic botanists are connected with them, and the planting, labelling and exhibiting are conducted with a view to interesting the public in the scientific basis of the work. The great collection of North American woods at the American Museum deserves special mention. People in this city who are interested in such subjects should also make themselves acquainted with the elaborate park system of Essex County, New Jersey, which has been laid out and organized with studious regard to future conditions and needs, and will undoubtedly develop important botanical features as time goes on.

Our own Botanical Garden you are to inspect to-day under unusually favorable circumstances. Even this, however, will give you but a very inadequate idea of the breadth and depth of its



organization and character. There is scarcely a department of botanical work for the development of which provision is not made, the several departments being under the care of accomplished specialists. As you go about the grounds and enjoy the beautiful grades, the roads, walks, and bridges, you perhaps do not realize the immensity of the task involved in bringing them into existence and at the same time establishing and developing the scientific, cultural and educational departments. From the time of its foundation, the Garden has had more than one interest clamoring loudly for the expenditure of every available dollar. Its economical and efficient management has usually contrived to divide that dollar and make each part of it do the work of the whole.

In the conduct of any growing enterprise not only does each step taken become a new point of departure, but new centers of work become established by the division of the old; and so our review would not be complete without a glance at the most important requirements for the future. One of these is the organization of a well-equipped botanical department at New York University. One of the leading universities of the country, with well-organized departments and many hundreds of students, it seems a continued misfortune that it should not be in a position to utilize the many facilities which we have to-day considered, and equally so that our science should not profit by the stimulus and support which would result from the maintenance of an adequate center of activity at University Heights.

Our Botanical Garden suffers greatly from the want of a larger endowment fund. Its charter provides for the construction and maintenance of its framework, but back of this lies the necessity for supporting its higher life, and for this support we must naturally look to its endowment. The two should keep close pace. The crown of the greater tree demands a greater root system for its support. Our plant has increased wonderfully in ten years, both in size and in the intensity of its activity, while the endowment has remained stationary. Its increase to the sum of \$1,000,000 has been undertaken, and the amount is none too large and can come none too quickly. One of the special needs

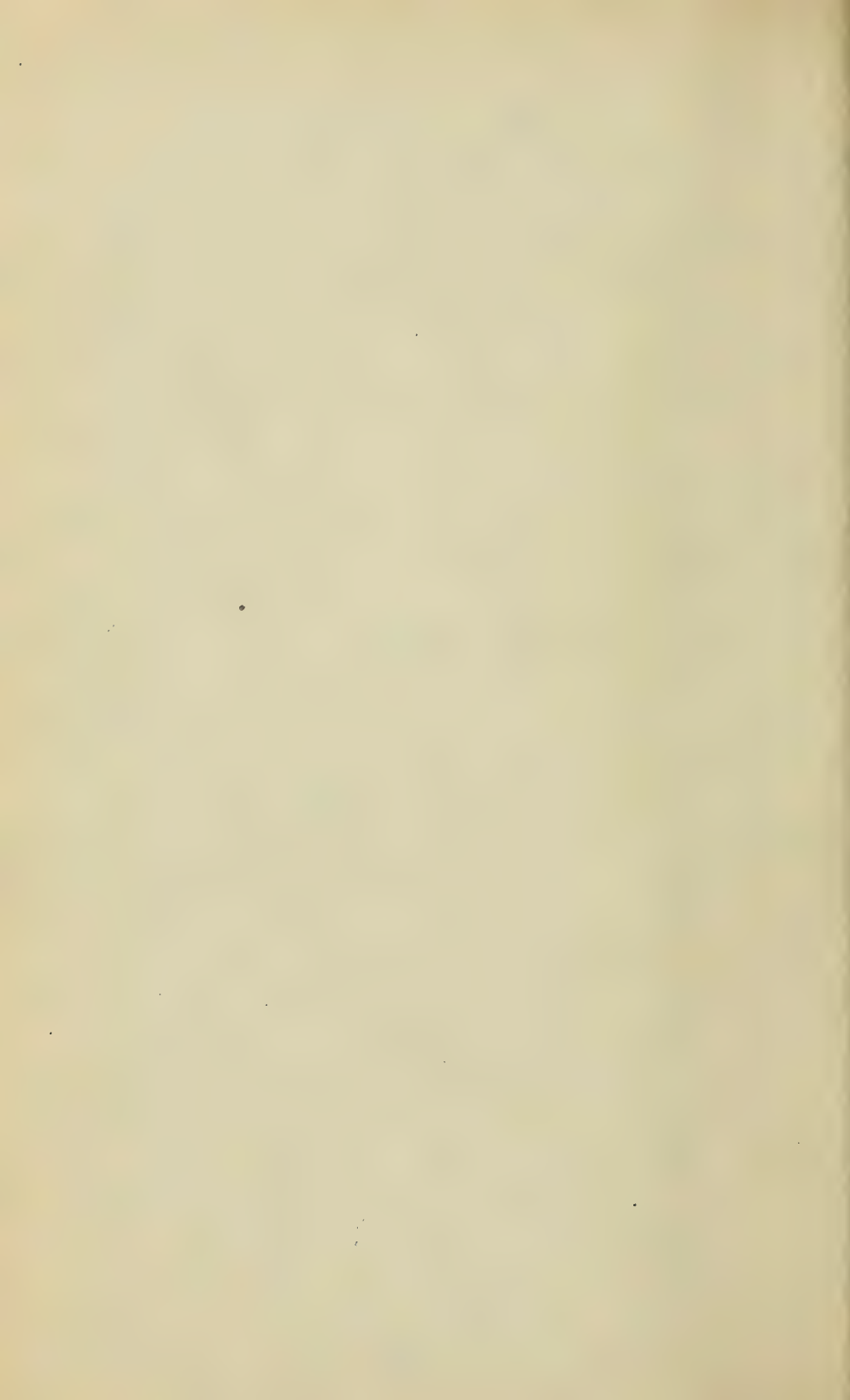
of the Garden, or rather of this part of the country through its Garden, is a department of forestry. From an economic point of view, this is by far the most important department of botany at the present time. Our need of increased forest resources is already alarming to every serious political economist. When an attempt is made to provide them, we find that we do not know how; that every tree must be known separately, and that until this is done practical operations must fail; and that the acquisition of this necessary knowledge is as slow as the growth of the trees themselves. It is urgently necessary that such centers of investigation should be established in numbers. Scarcely anywhere is there an institution that combines so many advantages for a successful organization of this kind as here. Our Club has this year undertaken to arouse interest in the subject by providing a course of ten field lessons, conducted by competent instructors, and open to all our members, without charge.

Did time permit, I should be glad to speak on this occasion of the special needs of our Club. In a general way we should get back to the work for which we were originally organized — the study of our local flora, at present construed as that within a 100-mile radius of this city. To do it properly provides ample work for years to come. It is a work of important scientific value, yet includes popular features calculated to interest every member. All that is needed is a leader, and this is the point of difficulty. He must be a capable botanist, and he must give practically his whole time to the work. This means that he must be compensated, and this is possible only through an endowment fund, or through a very large membership list, for both of which we earnestly hope. If 200 others of the 10,000 or more persons of this section whose interest in plants entitles them to become members of the Club would do so, there would be ample provision for the undertaking of this work.









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